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Challenges and Problems of Deployment of ICT Facilities by Public Higher Institutions During Covid-19 in Nigeria

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Abstract: During the COVID-19 lock down many public tertiary institutions were unable to effectively deploy ICT facilities for teaching and learning. This paper discusses the challenges and problems of deployment of ICT facilities by Public higher institutions during Covid-19 in Nigeria. Inadequate funding, inadequate ICT facilities, high cost of internet services, unstable internet services, unstable electricity, poor computer literacy of academic staff, poor computer literacy of students, poor implementation of ICT policies as the challenges and problems of deployment of ICT facilities by Public higher institutions during Covid-19 in Nigeria. Based on the findings, this paper recommended the following: adequate funding of ICT programme, provision of ICT facilities, subsidize of ICT facilities for schools, implementation of ICT policies, capacity development for lecturers, provision of constant electricity and internet Services.

Key words: COVID-19, Tertiary institutions, ICT, Problems, Public.

1. INTRODUCTION

In response to this clock down directive by different country across the World, Many universities switch to online education. Huili (2020) observes that as a result of the new coronavirus epidemic most universities in China have encouraged their professors to apply online teaching instead of in-class teaching and this is likely to continue for the indefinite future. Some professors and students have complained about problems with online teaching and lack confidence in its effectiveness, but many are still new to the whole online experience. Olabisi (2020) opined that Universities around the world are making use of communication technology to ease the effects of the global pandemic on their academic calendars. In China, universities are going for online teaching instead of in-class teaching; the ones in Australia have moved their classes online just as UK universities have suspended face-to-face teaching. Turkey started its remote university classes on March 23. In Kenya, universities have activated communication between lecturers and students via social media platforms and emails while classes have gone totally online in the Philippines and Kyrgyzstan. Teachers in France have been working with their students on Zoom. Olabisi (2020) observes that last year Ghana's President Addo Dankwa Akufo-Addo, directed the ministry of education to collaborate with the ministry of communications in rolling out open learning programmes in response to the closure of all educational institutions in the country. In the same vein, Mount Kenya University's Vice-Chancellor Peter Wanderi, has announced the extension of online teaching platforms for regular students to facilitate the learning process. And to take care of the over six million students that have experienced disruption to their studies, ten North African and 12 Arab countries have begun work on an e-learning initiative to facilitate open and online education.

Worried about the continued closure of the nation's higher educational institutions over the Corona Virus pandemic, minister of education in Nigeria, directed school administrators to switch to online learning during the COVID-19 lock down. This paper is aimed to discuss the challenges and problems that faced the deployment of ICT facilities by Public tertiary institutions during Covid-19 in Nigeria.

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1.1 Concept of COVID-19

World Health Organization (WHO), coronaviruses are a family of viruses that cause illnesses ranging from the common cold to more severe diseases such as severe acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS). These viruses were originally transmitted from animals to people. SARS, for instance, was transmitted from civet cats to humans while MERS moved to humans from a type of camel. Several known coronaviruses are circulating in animals that have not yet infected humans. The name coronavirus comes from the Latin word corona, meaning crown or halo. Under an electron microscope, the looks like it is surrounded by a solar corona. The novel coronavirus, identified by Chinese authorities on January 7 and since named SARS-CoV-2, is a new strain that had not been previously identified in humans (Nkwoemeka, Okwelogu & Amakiri 2020; Ogunode, 2020).

To prevent the spread of the virus government of every country declared closure of educational institutions. Dinesh, Shadi and Shuriah (2020) observed that countries across South and Southeast Asia have in quick succession announced the closure of their schools and universities for a minimum of two weeks in order to contain the spread of the COVID-19 virus which has been declared a global pandemic by the World Health Organization. But authorities in many of the countries acknowledge that closures could last much longer. The closures came thick and fast this week after the number of cases began to rise several weeks after countries in North East Asia including Japan, South Korea, Singapore and China – where the virus originated – closed their universities in February and March. Universities have yet to reopen in any of the countries in the region, which includes Hong Kong and Taiwan.

To reduce the impact of the COVID-19 on education, many countries switched to virtual learning and distance education. John (2020) opined that the current COVID-19 crisis has obliged most education systems to adopt alternatives to face-to-face teaching and learning. Many education systems moved activities online, to allow instruction to continue despite school closures. Tope (2020) observed that while many advanced countries recorded success in the adoption of online education during COVID-19 many other developing countries including Nigeria had challenges of switching her educational system especially the tertiary education to online or digital education. The Nigeria tertiary education is the largest in Africa (Noun, 2012).

2. Concept of Public Tertiary Institutions

Public Tertiary institutions are institutions owned by the government. Public tertiary institutions are institutions established by the law of the parliament to provide a public higher education for the people within the country. Tertiary Education is the education given after Post Basic Education in institutions such as Universities and Inter-University Centres such as the Nigeria French Language Village, Nigeria Arabic Language Village, National Institute of Nigerian Languages, institutions such as Innovation Enterprise Institutions (IEIs), and Colleges of Education, Monotechnics, Polytechnics, and other specialized institutions such as Colleges of Agriculture, Schools of Health and Technology and the National Teachers' Institutes (NTI) (NPE, 2013).

The goals of Tertiary Education shall be to: Contribute to national development through high level manpower training; provide accessible and affordable quality learning opportunities in formal and informal education in response to the needs and interests of all Nigerians; provide high quality career counseling and lifelong learning programmes that prepare students with the knowledge and skills for self-reliance and the world of work; reduce skill shortages through the production of skilled manpower relevant to the needs of the labour market; promote and encourage scholarship, entrepreneurship and community

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service; forge and cement national unity; and promote national and international understanding and interaction (NPE, 2013).

Tertiary Educational institutions shall pursue these goals through: Quality student intake; quality teaching and learning; research and development; high standards in the quality of facilities, services and resources; staff welfare and development programmes; provision of a more practical based curriculum relevant to the needs of the labour market; generation and dissemination of knowledge, skills and competencies that contribute to national and local economic goals which enable students to succeed in a knowledge-based economy; a variety of flexible learning modes including full-time, part time, block release, day-release, and sandwich programmes; access to training funds such as those provided by the Industrial Training Fund (ITF), Tertiary Education Trust Fund (TETFund); Students Industrial Work Experience Scheme (SIWES) that is well structured, coordinated and supervised; maintenance of minimum educational standards through appropriate regulatory agencies; an all-inclusive credible admissions policy for national unity; supporting affordable, equitable access to tertiary education through scholarships and students' loans; inter-institutional co-operation and linkages; and dedicated services to the community through extra-mural and extension services (NPE, 2013). The realization of the objectives of tertiary education hinges on the availability of human and material resources. One of the key materials resources is the information communication technology.

2.1 Concept of Information Communication Technology

There are many definitions of information communication technology given by different people. According to Chrisita and Shoko (2010) ICT is a library context to mean the application of various technologies such as computer, retro-graphics, audio-visuals and other electronic devices for storage, reproduction, and dissemination of information in a library environment. Ekoja, (2007) defined ICT as a kit or equipment used for capturing, processing, storing and accessing information. Nwachukwu (2005) sees ICT as a device or tool that allows for the collection, storage, processing or the communication of information. Patrick. & Brenda. (2018) observed that information and Communication Technology (ICT) is an umbrella term that includes any communication device or application encompassing radio, television, mobile phones, computer hardware and software, internet, satellite systems and so on as well as the various services and applications associated with them such as video conferencing and distance learning.It is the use of scientific devices in providing information faster and better. It involves the use of the computer software and other communication services together with their associated documentation. ICT brought about the use of internet. Vijayakumar and Vijayan (2011) viewed ICT as the application of computers and technologies for acquisition, organization, storage, retrieval, and dissemination of information. Malanga (2015) explained the definition further to mean a revolution that provides the platform and technical means of handling information and communication. With the definitions above, ICT can rightly be said to be a catalyst for generating, processing, storing and disseminating information.

Dhanavandan, Esmail, Mohammed and Nagarajan (2012) stressed that ICT has drastically changed every facet of human endeavors of which library is not an exception, such that libraries are now deeply engaged in digitization of almost all library resources in order to provide a fast, interactive and dynamic information services to users. In reflection to that, information has therefore been disseminated speedily around the globe due to advancement in the channel of communication. Library resources are being transformed from print to digital and web resources, which is being used extensively and subsequently resulted in tremendous growth of information dissemination and service delivery in the library. The use of Information and Communication Technology (ICT)

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facilities in performing library functions are becoming very useful in the libraries because it makes service delivery to the user faster and more efficient.

Information and Communication Technology (ICT) is used by all human resource in the educational institutions. The students used information and Communication Technology (ICT) to support their learning programme. Information and Communication Technology (ICT) helps students to carry out research, writes examination, check their result, submit assignments, register their courses online. The academic staff use information and Communication Technology (ICT) for e-teaching, preparation of lecture notes, e-assignment for students, e-examination, e-lecture note and carry out personal research. Lecturers also used information and Communication Technology (ICT) for e-conference meeting. The non-academic staff used information and Communication Technology (ICT) to carry out non-academic service like storage of students and staff information, sending and receiving memo, student payment etc. Babatunde & Paschal (undated) submitted that Nigerian Universities are facing huge challenges on the adoption of information and communication technology like other renowned universities of the world. During the COVID-19 lock down Femi (2020), Ojo (2020) and Ogunode (2020)m Ogunode, Adamu & Ajape (2021) agrees that many public higher institutions in Nigeria cannot migrate to virtual learning due to poor ICT development in the Country. Olukoju (2020) said there is no Nigerian university that has the requisite infrastructure to quickly switch over to online teaching. The average Nigerian university is structured to teach on the conventional platform and distance learning is not as developed (Guardian, 2020).

3. Challenges that Faced Deployment and Adoption of ICT for Effective Teaching and Learning during COVID-19 in Public Tertiary Institutions

Inadequate funding, inadequate ICT facilities, high cost of internet services, unstable internet services, unstable electricity, poor computer literacy of academic staff, poor computer literacy of students, poor implementation of ICT policies will be used as the challenges and problems of deployment of ICT facilities by Public higher institutions during Covid-19 in Nigeria..

3.1 Inadequate funding

Inadequate funding of public tertiary institutions in Nigeria affected the deployment of ICT during the COVID-19 era in the country. Many public tertiary institutions in Nigeria are underfunded. School administrators are not having access to adequate funds for the implementation of school programme. Many ICT facilities are not available in the institutions due to poor funding. Ogunode (2021) disclosed that inadequate funding is a major problem facing the administration of public higher institutions in Nigeria. He went further to said the inability of the government to implement the UNESCO 20% recommendation for educational budget annually is among the factors responsible for the underdevelopment of Nigerian higher institutions. During the COVID-19 many public higher institutions were unable to switch to virtual learning due to poor development of ICT infrastructural facilities which is associated with shortage of funding. Ogunode, Adamu & Ajape (2021) observed that inadequate funding of ICT programme in the Nigerian public universities is responsible for the poor utilization of ICT for delivering of teaching programme by the academic staff in the different higher institutions spread across the country. The funding of ICT programme is very poor and causes poor development of the ICT in major public universities across the country. Inability of the Nigerian government at every level to allocate adequate funds for the administration and management of ICT in the Nigerian higher institutions is the reasons behind why many school administrators cannot afford to purchase ICT for academic staff to be deploy for teaching, give assignment and online marking. The budgetary allocation for the entire educational institutions in Nigeria is below the 26% of the recommendation for developing countries like Nigeria to annually allocate for the administration and management of education. The inability to

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meet this requirement is among the basic reasons for poor development of ICT facilities in the various higher institutions in the country. The state of ICT infrastructural facilities is in comatose in many higher institutions in the country as a result of poor funding.

3.2 Inadequate ICT Facilities

Inadequate ICT facilities in many public higher institutions in Nigeria also prevented many higher institutions from deploying ICT for implementation of teaching, researching and other academic services in Nigeria. Many public higher institutions in the country do not have adequate ICT to support e-learning and e-teaching and e-researching. This submission is confirmed by Ogunode (2021) who submitted that many tertiary institutions in Nigeria do not have ICT facilities to implement teaching programme and many academic staff and students do not have access to function ICT facilities to support their academic activities and learning. Observed that problems hindering the adoption of ICT in the Nigerian educational institutions include shortage of infrastructural facilities like hardware, software, bandwidth access, lack of skilled manpower, unstable power supply and high cost of ICT. Babatunde & Paschal (undated) and Idowu & Esere, (2013) submitted that lack of facilities is one of the challenges militating against the deployment of Information and Communication Technology in Nigerian Universities. This is evident in the fact that Nigeria universities lack basic office gadgets and technologies like computer, printers, faxing machines, photocopiers, binders, projectors etc. This is appalling compared to other universities of the world, not to even talk of internet connection. These basic facilities contribute to the challenges facing deployment of information and communication technology in Nigeria universities, as no university can function effectively in this modern trend of ICT without these facilities. It is important, in that apart from educational training these office gadgets and technologies are needed to equip students for future office and corporate activities after their studies (Babatunde & Paschal undated).

3.3 High Cost of Internet Services

High cost of internet services in Nigeria is another major problem that frustrated the effective deployment of ICT for teaching and learning during COVID-19 in Nigeria. The internet services is very expensive in Nigeria. Many students cannot afford to spend huge among of money of weekly or monthly subscription. Many public higher institutions cannot bear the burden or the cost of providing these services free of charge for students and academic staff within the school environment due to poor funding. Ogunode (2021), Bayo (2018) and Musa (2017) all agrees that the high cost of internet services is a major challenge in the application and used of ICT facilities in the Nigerian higher institutions. Many public higher institutions in Nigeria after considering what it will cost them to switch into virtual education during the COVID-19 decided to shut the school down and wait until the institutions will be asked to resume for physical classes. One of the challenges of deploying ICT in Nigerian universities is the high cost of internet data and electronic services, which is basically the determinant of ICT usage and value (Babatunde & Paschal undated, Tongia, 2004). This apparently affects the deployment and full utilization of information and communication technologies in these growing countries, of which Nigeria is one. In Nigeria, the high cost of internet data and fast tariff set by internet providers, mostly international companies doing business in the country with the main interest of making profits is among the challenges of ICT deployment (Babatunde & Paschal undated).

3.4 Unstable Internet Services

Unstable internet services is a challenge that hindered many public tertiary institutions from deploying and adopted virtual education during COVID-19 pandemic. The internet services in Nigeria is weak and unstable. The services providers are not investing on quality ICT facilities and

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this is affecting the quality of services they are providing in the country. The computer system needs the internet services to enable online teaching and learning. Once these services are not stable or weak it affects the implementation of teaching and learning. The problem of unstable and weak internet services prevented effective teaching and learning during the COVID-19 for the institutions that decided to switch to virtual education during the period. Adebayo (2020) noted that many students and academic staff cannot upload there notes and students cannot receive e-note via their ICT facilities due to weak services. Ogunode, Adamu & Ajape (2021) submitted that internet service is what gives life to other ICT facilities to functions. In the absence of stable and quality internet service, other ICT facilities are useless. Internet services can be described as fuel that the ICT needs to operate or move. Internet service is very important to the operation and utilization of ICT facilities in educational institutions. In Nigeria, the quality of the internet services is poor and ineffective. The various internet service providers have not actually invested in the provision of quality services. The federal government agencies regulating the activities of the internet service provided are very weak, and this is responsible for the ineffectiveness in the internet service provision. Many higher institutions are not cover properly with internet services and this is affecting the application of ICT for teaching. Many academic staff with their ICT facilities cannot effectively use them because of weak internet services. In some public universities, ICT facilities have been provided in the lectures halls to aid delivering of lecture through ICT but absent or poor internet services such ICT facilities are abandon by the academic staff who are supposed to be using them for lecturing.

3.5 Unstable Electricity

ICT facilities needs stable power to function well. In Nigeria, one of the major challenges facing the economy is the energy problem. The power released to states and local government from the national grade is not adequate to cater for the over two millions Nigeria. Many public institutions especially the educational institutions that needs constant electricity for the implementation of their programme cannot access the supply from the various energy provided. Nigeria is among the countries ranked with low energy connection in the World. About 45% of Nigeria are not accessing constant electricity. This situation is affecting the various educational institutions from deploying and using ICT for academics purpose and administration. During the COVID-19 school closure in Nigeria many educational institutions that switch to virtual learning were frustrated by the problem of unstable supply of electricity. Babatunde & Paschal (undated) and Azuh & Melody, (2014) observed that in Nigeria, the biggest challenge to the growth and development of most industries is poor electricity supply. This is a huge setback to the progress of Nigeria, as it is difficult to boast of one full day without electricity interruption not to talk of a week or one Month. Meanwhile, most countries of the world are beginning to celebrate 100 years and still counting of no electricity interruption. Also, neighboring countries Nigeria supply electricity manage to have better and improved electricity supply than Nigeria.

3.6 Poor Computer Literacy of Academic Staff

Another problem that prevented many tertiary institutions from deploying ICT fully for the implementation of teaching and learning programme during COVID-19 is the poor computer literacy of academic staff. Ogunode (2020) submitted that many academic staff in the Nigerian higher institutions are not computer literate and this is affecting the rate at which they are using ICT for teaching in the various institutions. Ogunode (2020a), Umar, Rosnaini, (2018) and Idowu, Esere, & Iruloh, (2017) submitted many academic staff in the Nigerian higher institutions are not ICT computer literate and this is limiting their usage of ICT for carrying out academic services. Computer illiteracy is another challenge of ICT in Nigeria universities. This is due to the fact that an average Nigeria University staff is not computer literate, which is disappointing in this modern

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digital era (Babatunde & Paschal, undated, Idowu & Esere, 2013). No doubt that most of them may have at some point studied computer application or gone for basic computer training, but computer training without continuous practical is as good as nothing, as practice makes perfect. Computer illiteracy in this current age of ICT boom is really a great threat to any establishment, talk more of an educational institution as almost all human activities depends on ICT (Babatunde & Paschal, undated, Anene, Imam, & Odumuh, 2014). Livinus, (2013) did a study and find out that 50% of the respondents have tried to use computers while about 7.5% of them being non-academic counterparts do not. A percentage of 38.5 of academic staff and 33.5 of the non-academic staff were not computer literate. Only 11.5% academic and 16.5% non-academic were literate in computers. 37.5% and 44.5% of academic and non-academic staff respectively have no computers of their own. 37% and 33.5% of academic and non-academic staff respectively cannot make use of a computer. 13% academic and 20.5% non-academic staff respectively can surf the internet. On the whole, the level of computer literacy among the staff of the college is unimpressive. It is worthy of note that more non-academic than academic staff are computer semi-literate.

3.7 Poor Computer Literacy of Students

The poor literacy rate of many tertiary institutions students in Nigeria also slow down the deployment and adopting of ICT during the COVID-19 era. Many students in Nigerian higher institutions are not computer literate and to be able to use ICT you must master the various skills and ability of usage. Ogunode (2020) observed that the reasons why many higher institutions are not using ICT for teaching and learning is that many of their students are not computer literate. Mike (2019) cited Thornburg, (2002) who observed that many students have internet mobile and other ICT facilities and universities have internet facilities yet many student cannot use these internet facilities for their learning. The inability of these students to use the internet facilities effectively will limit the students' usage of ICT for learning. Airen (2011) did a study on ICT literacy of the undergraduates and found that students in Faculty of Social Sciences were found to have poor skills in the use of computer and the Internet (with more than 33%), when the average was computed for very poor and poor ICT knowledge, while over 34% of the respondents in Faculty of Arts were found to have poor skills in the use of the telephone. The result also showed that six factors identified as constraints to ICT literacy of the undergraduates were: namely: Inaccessibility to ICT, Inadequate ICT, lack of skills to use these facilities, irregular power supply, limited duration for the use of ICT and frequent computer breakdown. Out of these six factors, three were found to be major given that more than 50% of the respondents identified them as constraints: irregular power supply (67.4%), inadequate ICT (54.3%) and limited duration of the use of the available ICT (54.2%). A study was carried by Nbina, Obomanu and Vikoo (2011) to investigate Utilization of information and communication technology for quality instruction in River State University of Education and discovered that students in Rivers State University of Education Port Harcourt have poor knowledge of e-learning.

3.8 Poor Implementation of ICT Policies

The poor implementation of ICT policies in the various tertiary institutions also hampered the deployment and the use of ICT for the implementation of teaching, researching and carrying out academic service during COVID-19 pandemic period. The various policies designed for the development of ICT in the Nigerian tertiary institutions are not fully implemented and this is affecting the use and application of ICT for teaching and learning. The COVID-19 pandemic exposed the inadequacies in educational system of Nigeria. Ogunode, Adamu & Ajape (2021) opines that poor implementation of ICT policies in the public universities in Nigeria is another factor preventing the academic staff from using ICT to carry out their functions of teaching, researching and providing community services. In order to take the Nigerian educational

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institutions to the next level where ICT will be used for teaching and learning, the Nigerian government developed and formulated many ICT policies for all the educational institutions. Agencies were created for the development of ICT software for the various educational institutions. It is amazing that as good as these ICT policies are; the implementation was not done due to many reasons which include; political instability, unstable educational policies, institutional corruptions and inadequate funding. The poor implementation of the ICT policies for the higher institutions in the country is a major challenge preventing effective utilization of ICT facilities by the academic staff.

4. Recommendation

Based on the findings, this paper recommended the following: adequate funding of ICT programme, provision of ICT facilities, subsidize of ICT facilities for schools, implementation of ICT policies, capacity development for lecturers, provision of constant electricity and internet Services.

a) Adequate Funding for Computer Education Programme: The government should increase the funding of ICT education in all the public tertiary institutions in Nigeria.

b) Provision of ICT Facilities: The government should provide adequate ICT facilities to all the public tertiary institutions to enable the institutions to deploy ICT facilities for teaching and learning in the classroom

c) Subsidize the Cost of ICT facilities: The government should subsidy ICT facilities for students to enable students to buy their personal systems and use it for their learning.

d) Implement the ICT Policies on Education: The national policy on information and communication technology in all tertiary institutions should be well implemented beyond mere policy statement.

e) Capacity Development for lecturers: Capacity development programs should be provided for tertiary institutions lecturers and to enable them to use ICT facilities to support their learning.

f) Provision of Constant Electricity and Internet Services: The government should ensure that educational institutions in the country especially the tertiary institutions are provided with constant power supply and internet services.

Conclusion

In conclusion, this paper discussed the challenges and problems of deployment of ICT facilities by Public higher institutions during Covid-19 in Nigeria. Inadequate funding, inadequate ICT facilities, high cost of internet services, unstable internet services, unstable electricity, poor computer literacy of academic staff, poor computer literacy of students, poor implementation of ICT policies were identified as the challenges and problems of deployment of ICT facilities by Public higher institutions during Covid-19 in Nigeria. Based on the findings, the paper recommended the following: adequate funding of ICT programme, provision of ICT facilities, subsidize of ICT facilities for schools, implementation of ICT policies, capacity development for lecturers, provision of constant electricity and internet Services.

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